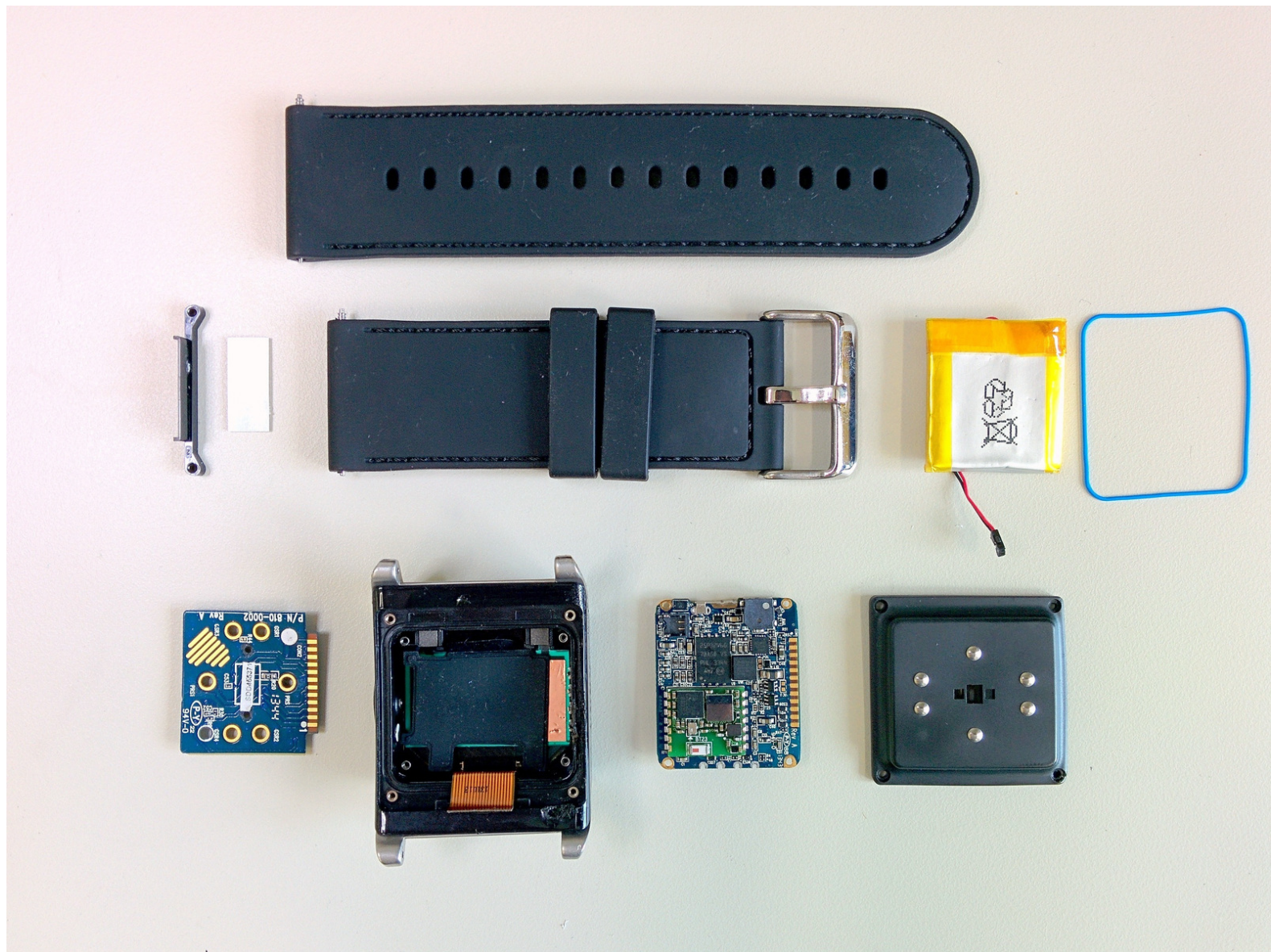




# Basis B1 Fitness Tracker Teardown

First Generation of Basis B1 Activity Tracker comes in numerous sensors, released sometime in 2013

Written By: Denz Choe



## INTRODUCTION

This time around, it is time to open up an activity tracker, that seems fixable.. although you might be leaving a few melted plastic marks.

There is a [very lengthy article here](#) that writes about his UX on the B1 tracker.

You can also [skip ahead to this table](#) he had provided that listed down all the functions and features the B1 offers

Also, if you like to read further, Basis had written a whitepaper of its [B1 product here](#).

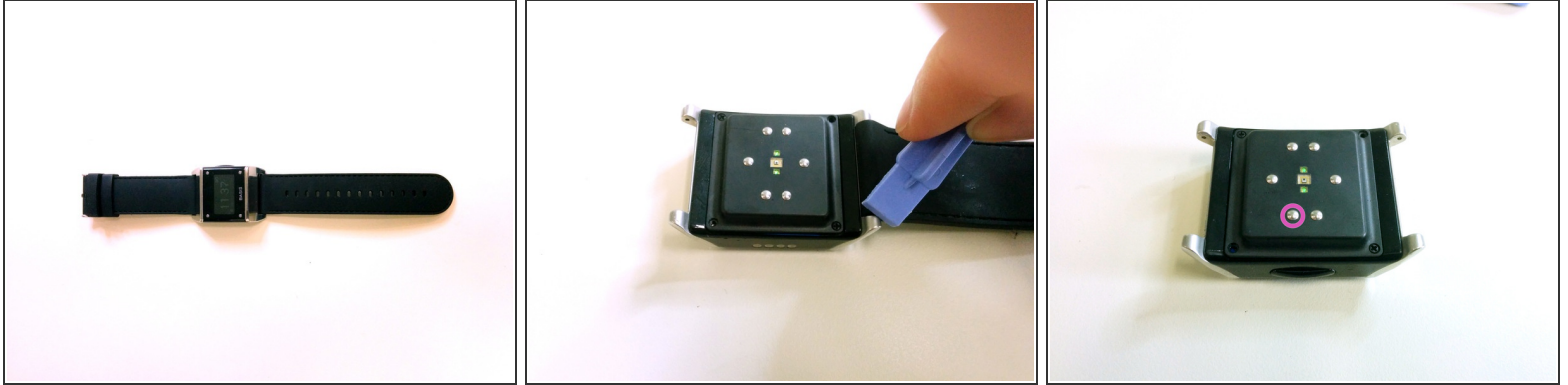
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### TOOLS:

- [Spudger](#) (1)
  - [iFixit Opening Tools](#) (1)
  - [Tweezers](#) (1)
  - [Phillips #0 Screwdriver](#) (1)
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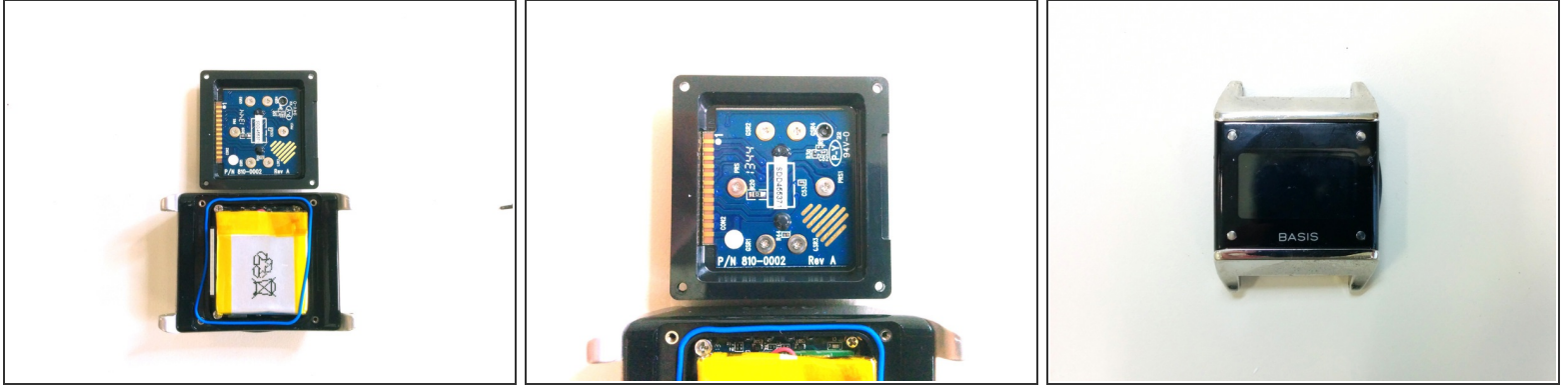
## Step 1 — Basis B1 Fitness Tracker Teardown



- Technical Specifications
  - 1 MHz RISC 16 Bit MicroController, Active Mode @ 400uA
  - Ultra Low-Power Consumption at Standby Mode @ 1.3uA, and Off-Mode with RAM Retention @ 0.22uA
  - Sensors onboard: Optical blood flow; Galvanic Skin response (perspiration), Ambient Temperature, Body Temperature, 3-Axis Accelerometer
- First, you begin by taking off the straps. . If you have taken out a watch strap before, it is a similar method
- Flip the watch, use the plastic opening tool and slide into end of the strap, then push the spring contacts until the strap just breaks away from its catch
- Independent electrodes to possibly modulate AC Signal onto your skin and measure at the receiving end. Possibly measuring impedance (thereby knowing how much you sweat)

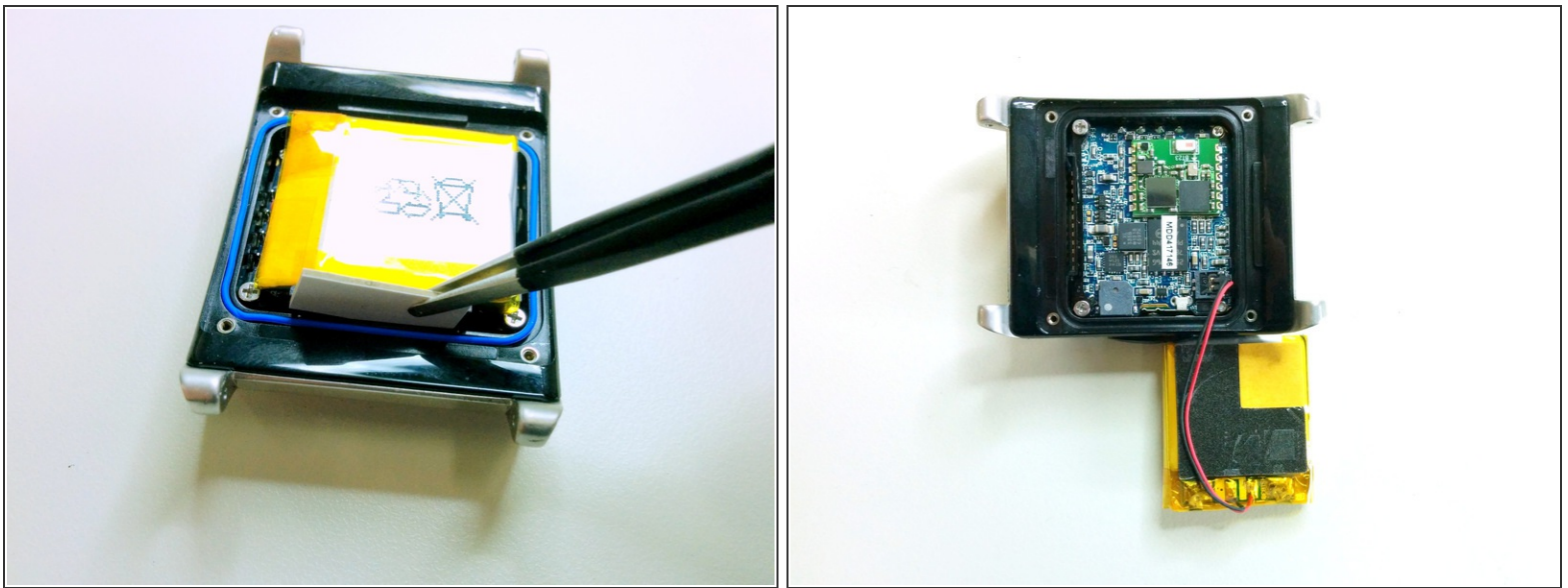


## Step 2



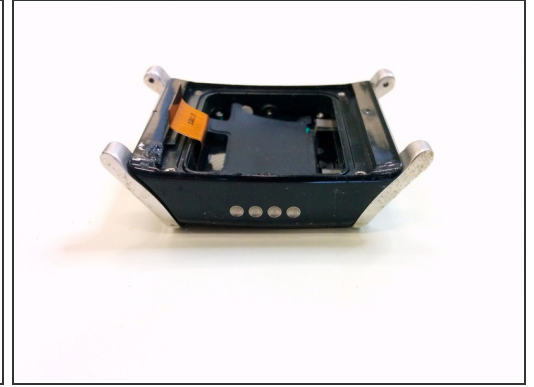
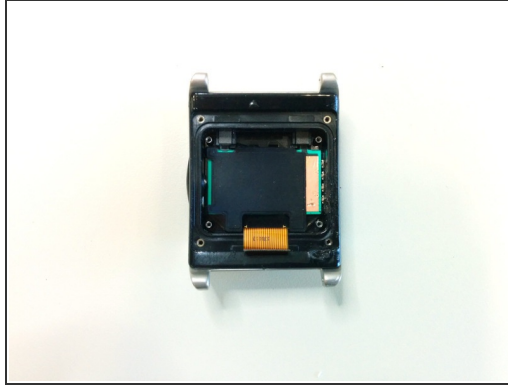
- Unscrew the four screws at the back of the watch, then gently use the spudger to open it

## Step 3



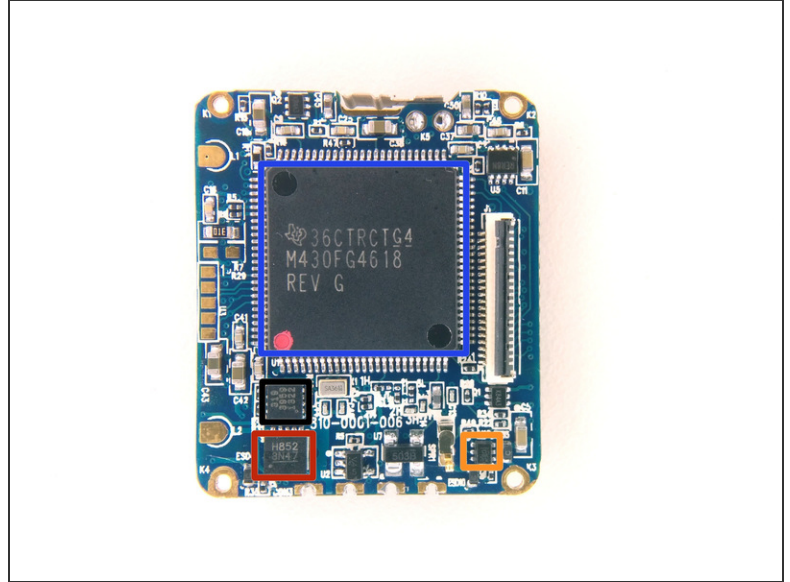
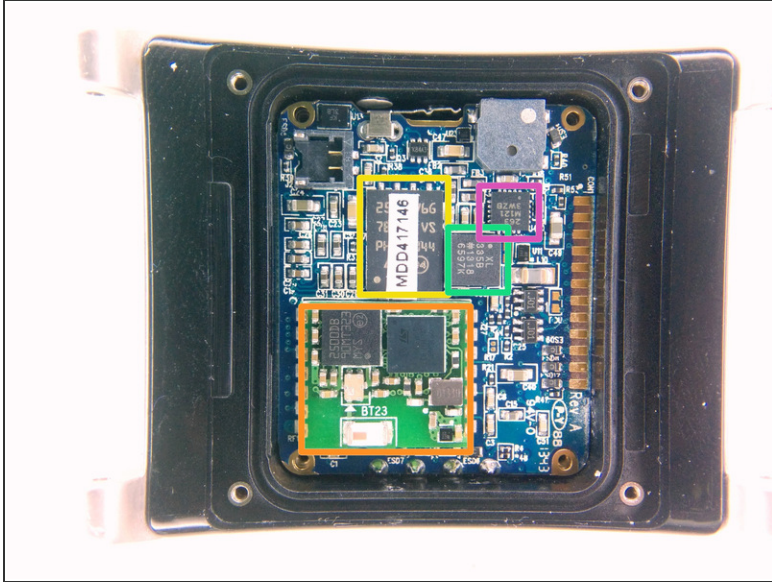
- Remove the [elastomeric \(aka zebra\) connector](#)
- Then pull the power plug away from its supply point to remove the battery
- Unknown battery capacity

## Step 4



- You see the gap in between here? That gap exist where the LCD sits beneath the MCU board.
  - Using a bit of highly precise de-soldering technique (left quite a few melted marks btw), you have to desolder the 4 contact points in order to separate the board from the LCD panel
- i** P/S: Credit to my peer who helped me out. Fortunately it wasn't me. Else I would have left quite a larger mess :)

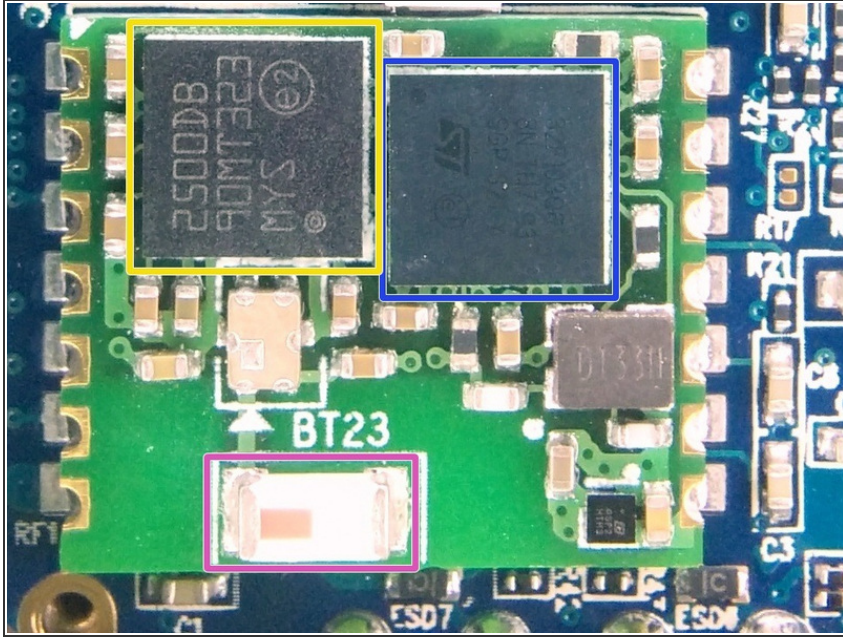
## Step 5



- 1st Temperature Sensor (Texas Instruments) [TMP112](#) marked as OBS. This might be one of the sensors that detects the *ambient temperature* as it is positioned away from the human body
- ⓘ Thanks to Luis Filipe Rossi for identifying the external SOT563 temperature sensors
- 25P32V6G - ST 32MB NOR Serial Flash Memory
- Analog Devices - [ADXL335B](#), 3-Axis Accelerometer
- Freescale MPR121 Proximity Capacitive Touch Sensor Controller (for the 4 capacitive touch buttons) as listed at [this site](#) & pictured [here](#)
- [MSP430xG461x](#)- Texas Instruments MSP430 family of ultralow-power mixed signal microcontroller. Built-in Temperature Sensor.
- Unknown 31939591322
- Unknown H852 3N47

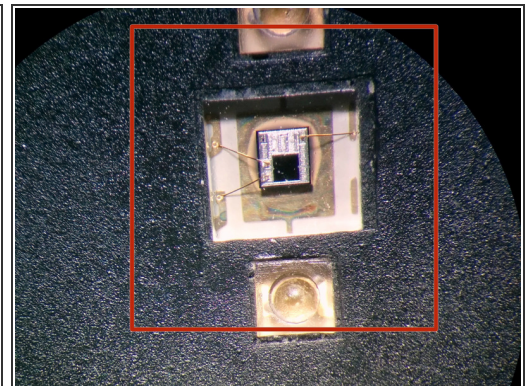
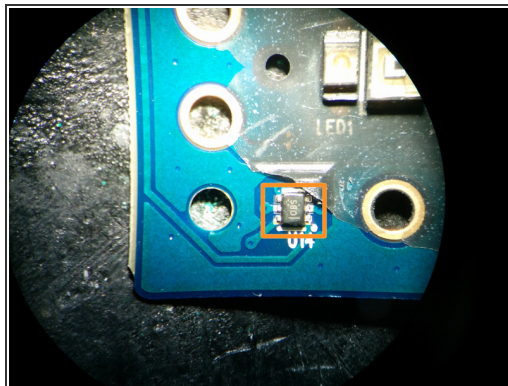
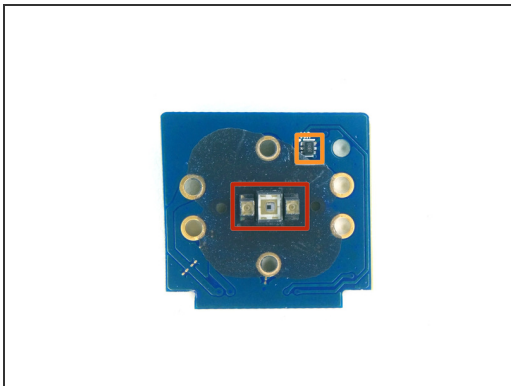


## Step 6



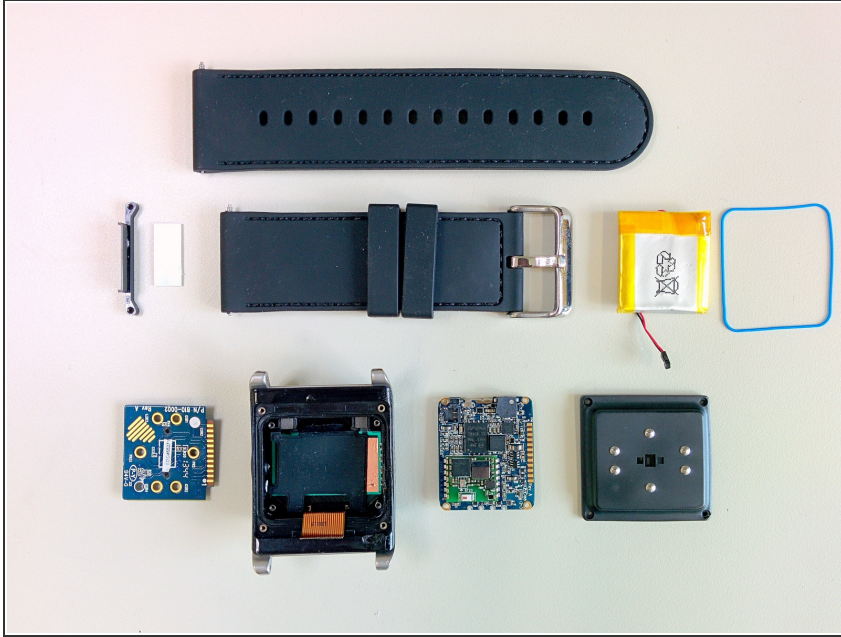
- I'm quite interested of what they have done here. Instead of doing their own RF design, they employed a *module* design. Too bad there is no way to give the RF Module company any publicity Edit - the module is [BT23](#) from ampedrf
- Cortex M3 - [STM32F103C6](#); Low-density performance line, ARM-based 32-bit MCU with 16 or 32 KB Flash, USB, CAN, 6 timers, 2 ADCs, 6 communication interfaces. Built-in temperature sensor here
- Unknown 2500D8, 90MT323 Bluetooth Transceiver Chip
- Chip Antenna

## Step 7



- The wire bonded Optical Blood Flow Sensor (under a magnifying glass) with the two LED
- 2nd Temperature Sensor (Texas Instruments) [TMP112](#) marked as OBS. This might be one of the sensors that detects the *body temperature* as it is positioned nearer to the human body

## Step 8



- The Basis B1 Tracker was an easy device to disassemble. Apart from the de-soldering process, it could quite be a minimal effort.
- That's it, leave more comments below if you would like to have more additional details of the specific part you are interested in.

To reassemble your device, follow these instructions in reverse order.

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